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A Framework to Assist in Making Sensitive Species Habitat Assessments for BLM-Administered Public Lands in Idaho

Sage Grouse
(*Centrocercus urophasianus*)

DRAFT DOCUMENT

Prepared by U. S. Bureau of Land Management, Idaho
May, 2000

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Prepared by U. S. Bureau of Land Management, Idaho

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May 2000

A Framework to Assist in Making Sage Grouse Habitat Assessments

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I. Introduction

A. Purpose and Need

Sage grouse (*Centrocercus urophasianus*) are North America's largest grouse and found only in habitats dominated by sagebrush (*Artemisia* spp.), particularly big sagebrush (*Artemisia tridentata spp.*). Historical habitat losses and alterations have significantly reduced the range of this species and populations have declined in remaining habitats (Braun 1998, Schroeder et al. 1999). Habitat losses in Idaho have been so severe in recent years as a result of wildfires and subsequent annual grass invasions that conservation efforts are underway to: (1) protect, maintain and enhance existing suitable habitat, (2) improve degraded habitats and (3) restore habitats, where most feasible. They are an Idaho Bureau of Land Management (BLM) sensitive species.

The rate of sagebrush habitat loss has been so great that if conservation measures are not implemented immediately there is a high likelihood that sage grouse and other sagebrush obligate species will warrant listing under the Endangered Species Act within the next 10 years. Recovery or maintenance of sage grouse habitats and populations will be contingent on implementation of land management practices that contribute to, rather than detract from, sage grouse habitat quality and quantity. To complement these efforts we need to have an objective, scientifically-based sage grouse habitat assessment process that can be used for a variety of purposes.

Much of the remaining and restorable sage grouse habitats in Idaho are located on public lands administered by the BLM. This framework is designed to facilitate and standardize sage grouse habitat assessments for BLM lands in a manner that complements management direction in the Interior Columbia Basin Ecosystem Management Project (ICBEMP), fire management planning, sagebrush steppe restoration planning and field evaluations for attainment of land use plan objectives and Idaho Standards for Rangeland Health (USDI 1997) assessments. This framework describes the habitat assessment process Idaho BLM will use to:

1. Identify remaining sage grouse habitat areas and priority habitat restoration areas.

2. Evaluate and document existing sage grouse habitat suitability and habitat restoration needs.

3. Assist in evaluating land uses on public lands that may affect sage grouse habitat conditions or habitat restoration efforts.

4. Assist in evaluating attainment of pertinent land use plan objectives and Standard 8 of Idaho's Standards for Rangeland Health for sage grouse.

This framework is designed acknowledging the immediacy of needed actions. Some of what is outlined in this framework is incomplete and as such it must be considered a dynamic document that will change as we acquire new information. It will remain a draft document through the FY 2000 field season to allow for field testing and review. It is designed to accommodate the realities of current Idaho BLM workforce and budgetary constraints. It is more qualitative than quantitative, although the ability to be more quantitative is provided. It is designed to be applied to a wide range of environmental conditions. This means it must be flexible and can be modified or refined for local conditions; a certain degree of professional judgement will be required in its application.

This habitat assessment framework does not address potential land uses that may directly affect the birds or their behavior and use of areas (e.g., transmission line mortalities, structures near leks or wintering areas that may provide perch sites for raptors). Additional instructions will be developed and provided to the Field Offices at a later date for these types of land uses and related potential effects.

B. Applicability of the Framework for Other Sagebrush Obligates

There are several other animal species that are dependent on the presence of sagebrush for survival. Our information concerning these other species and their habitat needs is generally poor, except for a few exceptions. We do know that populations of many sagebrush obligates are declining Paige and Ritter 1999, Wisdom et al. 1999) and several have been identified as BLM sensitive species.

Sage grouse require large areas of sagebrush to survive and we have considerable knowledge of their habitat requirements in comparison with other sagebrush obligates. *As such, we will use this species as an umbrella species (Noss 1990) and assume that habitat needs for other sagebrush obligate species are also being benefitted as a result of protection, improvement and restoration of sage grouse habitat.* In some cases other sagebrush obligates will have habitat needs in addition to what is outlined in this framework for sage grouse. Biologists with the U.S. Geological Survey and Partners in Flight will be assisting us in evaluating the applicability of this framework and the sage grouse habitat indicators to other sagebrush obligate bird species. Where needed, biologists are encouraged to address the unique, additional habitat needs of other sagebrush obligates on a case-by-case basis.

C. Guidelines for Management of Sage Grouse Populations and Habitats

In 1977 guidelines for sage grouse habitat management were published (Braun et al. 1977). Since then considerably more information has accrued concerning sage grouse population status and habitat needs, and concern has grown over population trends and future of the species (Braun 1998). As a result, new guidelines are being published (Connelly et al. *in press*) in cooperation with the Western Association of Fish and Wildlife Agencies. *Habitat definitions and quality criteria used for this framework document are primarily derived from these guidelines and the reader is encouraged to read them to better understand the rationale for certain habitat indicators.* We provide a brief review of those portions of the guidelines pertinent to this assessment framework.

1. Breeding Habitat

Breeding habitat includes leks, nesting and early brood-rearing areas. Suitable nesting and early brood-rearing habitats are dominated by sagebrush with a healthy herbaceous understory. Connelly et al. (*in press*) recommend that breeding habitats (exclusive of leks) are managed to support 15-25% canopy cover of sagebrush, perennial herbaceous cover averaging at least 18 cm (7 inches) in height with at least 15% grass canopy cover, 10% forb canopy cover and a diversity of forbs.

2. Late Brood-rearing Habitat

From late June to early November sage grouse will use a variety of moist and mesic habitats where succulent forbs are found. These habitats include riparian areas, wet meadows, lakebeds, farmlands, uplands including sagebrush and recently burned areas. Avoiding land uses that reduce soil moisture,

increase erosion, cause invasion of exotic plants, and reduce abundance and diversity of forbs is recommended.

3. Winter Habitat

During the winter months sage grouse feed almost exclusively on sagebrush. Sagebrush stands with canopy covers of 10-30% (inclusive of big and low species of sagebrush) and winter cover heights of at least 25 cm (10 inches) above the snow is needed. Topographic relief and a diversity of sagebrush heights in an area are important.

II. Regulatory Mechanisms and Management Direction - BLM Land Use Plans, Regulations, Policies and MOU's

The adequacy of existing regulatory mechanisms is one of the five factors that the Fish and Wildlife Service reviews during a species status review for possible listing as threatened or endangered. For BLM-administered public lands federal laws and associated regulations and policies define these regulatory mechanisms. The Federal Land Policy and Management Act (FLPMA) of 1976 is the primary federal law that governs most land uses on BLM-administered lands although other federal laws also provide management direction. Memorandums of Understanding (MOU's) are not binding, decision-making documents but do provide general management direction and emphasis.

It is very important that BLM's existing regulatory mechanisms sufficiently address the habitat needs of sensitive species like sage grouse in decision-making processes to ensure that BLM management is not contributing to the need to list the species. This framework establishes a habitat assessment process to help accomplish this for sage grouse.

Idaho BLM habitat goals for sage grouse, consistent with LUPs and BLM policies and regulations, will be to: (1) protect, maintain and enhance existing suitable habitats, (2) improve degraded sagebrush habitats to suitable conditions, where feasible, and (3) restore habitats to suitable conditions, where most feasible and important for long-term recovery.

A. Existing Land Use Plans

Land use plans (LUP's) in Idaho can be either Resource Management Plans or Management Framework Plans depending on the Resource Area. These plans were developed with public participation and meet the requirements of the FLPMA. These plans establish the management direction for resource uses of public lands administered by the BLM and are, in most cases, the primary decision-making documents (43 CFR 4100).

Most Resource Areas within the range of sage grouse in Idaho have LUP objectives either specific to sage grouse habitat management or general objectives dealing with managing special status species. *This framework document will be used to assess attainment of these objectives as they pertain to sage grouse. In the cases where LUP's do not have either sage grouse or general special status species objectives, other authorities (e.g., grazing regulations) will be used until LUP maintenance, amendment or revision*

incorporates such objectives. We are assuming that many of the general habitat needs for other sagebrush obligate bird species are similar to those of sage grouse and therefore addressed in this assessment framework. However, there will be areas or circumstances that will warrant species-specific assessment.

B. Interior Columbia Basin Ecosystem Management Project (ICBEMP)

The draft Supplemental Environmental Impact Statement for ICBEMP is currently out for review. If approved, the Record of Decision will amend all BLM Land Use Plans in Idaho. This project provides a long-term integrated strategy that will provide consistent direction at the regional and subregional levels to assist federal land managers in making land use decisions at a local level within the context of broader ecological considerations. This framework document is consistent with and uses the analysis step-down process outlined for ICBEMP.

C. Idaho Standards for Rangeland Health and Guidelines for Livestock Management

In 1995 new grazing regulations were finalized (60 FR, February 22, 1995) that included Subpart 4180 addressing the "Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration." Within the scope of these regulations, 43CFR 418.2(d), includes specific direction to the BLM State Directors to develop standards that among other things would address:

> "(4) Habitat for endangered, threatened, proposed, candidate, or special status species; and; (5) Habitat quality for native plant and animal populations and communities..." (43 CFR 4180.2 (d)...)

In addition, 43CFR 4180.2(e) requires development of guidelines to address:

> "(9) Restoring, maintaining or enhancing habitats of Federal Proposed, Federal Candidate, and other special status species to promote their conservation;"

In August, 1997 the Secretary of Interior approved Idaho's S&G's. Standard 8 of Idaho's S&G's addresses special status species management:

> "Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species."

Since 1997 S&G assessments and determinations have been conducted in Idaho for areas of BLM-administered lands. Unlike other Standards, specific assessment procedures have not been developed for Standard 8, largely due to the diverse array of sensitive species in the state and the difficulties in developing applicable assessment protocols. This framework outlines the habitat assessment procedure for sage grouse, a BLM sensitive species, and will be used by all BLM Field Offices for Standard 8 assessments.

D. BLM National Policy on Special Status Species Management

BLM national policy directs State Directors to afford State-designated sensitive species the same level of protection as provided for federal candidate species (BLM 6840 Manual). Specifically the policy direction states:

> "BLM shall carry out management, consistent with the principles of multiple use, for the conservation of candidate [and sensitive] species and their habitats and shall ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened/endangered. Specifically, BLM shall:
>
> 1. Determine the distribution, abundance, reasons for the current status, and habitat needs for candidate [and sensitive] species occurring on land administered by BLM, and evaluate the significance of lands administered by BLM or actions in maintaining those species.
>
> 2. For those species where lands administered by BLM or actions have a significant affect on their status, manage the habitat to conserve the species by:
>
> a. Including candidate [and sensitive] species as priority species in land use plans.
>
> b. Developing and implementing rangewide and/or site-specific management plans for candidate [and sensitive] species that include specific habitat and population management objectives designed for recovery, as well as the management strategies necessary to meet those objectives.
>
> c. Ensuring that BLM activities affecting the habitat of candidate [and sensitive] species are carried out in an manner that is consistent with the objectives for those species.
>
> d. Monitoring populations and habitats of candidate [and sensitive] species to determine whether management objectives are being met....."

E. Idaho Sage Grouse Management Plan and MOU

Conservation planning for sage grouse began in earnest with development of the Idaho Sage Grouse Management Plan (IDFG 1997). In 1998 Idaho BLM signed a Memorandum of Understanding (MOU) to support the plan. Management objectives for public lands pertinent to habitat assessment include (IDFG 1997:12):

> "1. Manage nesting and early brood habitat to provide 15-25% big sagebrush canopy cover and about 7 inches or more of grass and forb understory during the May nesting period.
>
> 2. Manage for late summer brood habitat that includes a good variety of succulent vegetation adjacent to sagebrush escape and loafing cover.
>
> 3. Manage for winter habitat that has sagebrush exposed under all possible snow depths. This can consist of low sagebrush (*A. arbuscula* or *A. nova)* and big sagebrush *(A. tridentata*) communities. A sagebrush canopy cover of 15-25 % with heights of 10-12 inches above the snow is critical to survival of sage grouse."

Local Sage Grouse Working Groups have been formed to "assist in development of sage grouse management efforts that achieve local population goals" (IDFG 1997, Appendix B). This framework is consistent with the public land habitat management objectives of the Idaho Sage Grouse Management Plan and should help the local working groups with habitat-related issues for BLM-administered public lands.

III. Habitat Assessment Process

This assessment process is designed hierarchically to complement the step-down analysis direction associated with ICBEMP. It primarily provides guidance at the subbasin (mid-scale), watershed (fine-scale) and project or site-specific levels. Regional or large-scale information are discussed briefly. Information sources and assessment processes vary depending on the scale and project-specific needs.

A. Large-scale Information and Assessment Use

Large-scale sage grouse population and habitat data include information generated at the national and regional levels. Regional vegetation (e.g., GAP data) and sage grouse distribution maps, historical and current, are available from a variety of sources.

The ICBEMP provides general management direction at the regional scale and associated science documents provide additional sagebrush steppe and sage grouse information (Wisdom et al. 1999). Habitat restoration directions for rangelands (includes sagebrush steppe) are outlined and priority restoration subbasins have been identified. Directions are also provided for terrestrial source habitats in priority watersheds, which have also been identified.

B. Mid-Scale Information and Assessment Use

Subbasin reviews are intended to provide an understanding of how management activities in subbasins fit in with the broad-scale ecosystem and public land management emphasis. Broad habitat and population status and condition assessments are appropriate for this scale. Identifying important sage grouse habitats, existing and potential, is important at this level. More detail should be added at the watershed or site-specific levels as needed.

1. Idaho Sage Grouse Habitat Planning Map

Except for a few areas, suitable, current sagebrush steppe vegetation data are lacking to delineate existing and potential habitats at the sub-basin scale. Fires throughout southern Idaho change the landscape patterns so quickly that vegetation mapping efforts soon become obsolete unless updated regularly. Until current vegetation mapping data are available that can discern important vegetation community differences (e.g., sagebrush canopy cover classes, or differentiate perennial grasses from annual grasses or low density sagebrush areas) we will rely on more qualitative information suitable for subbasin planning needs. We have developed the "Sage Grouse Habitat Planning Map" to meet these needs (Appendix A describes mapping process). This map is not provided in this framework document but is available at all Idaho BLM offices and will be available on the Idaho BLM Internet site.

The general purpose of this map is to provide a relatively simple but widely applicable mid-scale, statewide map showing general habitat conditions. Historical and current sage grouse distribution and other habitat information were used to define extent of habitat areas. Five polygon types were used to describe sagebrush steppe habitats based on the following definitions:

Key Habitat Areas: These are generally large-scale, intact sagebrush steppe areas that provide sage grouse habitat.

Restoration Habitats: Areas that currently are or were historically sage grouse habitat that, if restored, would provide better habitat at some time in the future.

Restoration Type 1 (R1): Sagebrush-limited areas with acceptable understory conditions in terms of grass species composition. Includes native and seeded perennial grass rangelands. These are important areas to protect from wildfire and encourage sagebrush establishment and retention. Inexpensive management treatments may be needed (e.g., sagebrush and/or forb seedings).

Restoration Type 2 (R2): Existing sagebrush cover in these areas may or may not be adequate to meet the needs of sage grouse, but understory herbaceous conditions are poor. Undesirable plant species such as cheatgrass (*Bromus tectorum*), medusahead rye (*Taeniatherum caput-medusae*) or other exotic plants are common to dominant. Expensive management treatments are needed for restoration.

Restoration Type 3 (R3): Areas where junipers are encroaching into sage grouse habitat areas. Opportunities exist for improving habitat through appropriate fire management response, prescribed fire, chemical or mechanical means.

Linkage Habitat: Corridors or areas joining Key and/or Restoration Habitats, through which sage grouse currently move or may eventually move or occupy. Protection from wildfire is important, to facilitate sagebrush establishment or retention.

This map will be used for subbasin reviews or other mid-scale or state-wide planning efforts to:

a. Define the analysis areas for sage grouse in Idaho. *BLM activities outside of the areas identified as key or restoration areas will not be considered as existing or potential habitat for sage grouse.* This may not apply to other sagebrush obligate species.

b. Identify watersheds where sage grouse will be an important emphasis for land use management decision-making.

c. Plan and prioritize fire suppression, fuels management and prescriptive activities needed for habitat protection.

d. Plan and prioritize sage grouse large-scale habitat restoration efforts.

This map will be updated annually to keep information current. We fully anticipate that this map will become more refined as our information concerning sage grouse habitat improves.

2. Mid-scale Habitat Assessment Schedule for Ongoing Programs

Because of the large land area involved (>8 million acres of BLM-administered land in Idaho) sage grouse habitat assessments for ongoing programs such as livestock grazing permits will occur over several years. Therefore, it is important that the sequence of evaluations be systematically planned and designed to address those regions where habitats are most important, most susceptible to change or have the greatest restoration potential. In addition, these priorities must be considered with other BLM management priorities such as ongoing Endangered Species Act and Clean Water Act compliance efforts. *We will use existing processes, the S&G 10-year implementation schedule or subbasin review schedules, to accomplish this melding of priorities and long-term assessment planning. BLM Districts will review these schedules and make necessary adjustments to address important sage grouse habitats and priority restoration areas.*

C. Fine-Scale Information and Assessment Use

Generally, fine-scale is geographically defined by watersheds (DOA/DOI 1995). However, in some cases the fine-scale information for sage grouse may more appropriately be collated at the allotment level depending on local needs. Allotments vary in size from as small as 40 acres to greater that 250,000 acres. In most areas, particularly where small allotments dominate the landscape watersheds should be the fine-scale assessment unit. However, in areas where large allotments (>100,000 acres) dominate the landscape then these may be appropriate fine-scale units. This flexibility allows for better integration of assessment and decision-making processes.

At this level, understanding land uses and the distribution, importance and spatial context of seasonal habitats on the landscape is important for designing appropriate and efficient site-level assessments. A variety of information sources should be reviewed at this level before going into the field for data collection. *It is important at this stage that known historic and existing breeding, brood-rearing and winter habitats are identified and mapped and the Sage Grouse Planning Maps further refined. Detailed mapping is not expected and Field Offices should use the best available information.*

1. Sage Grouse Lek Attendance Data

Current and historical lek information can help to define areas of management and evaluation emphasis. Connelly et al. (*in press*) recommends intensive habitat management for an area 3.2 km (2 miles) around leks for non-migratory populations and 18 km (11 miles) for migratory populations. Sage grouse in Idaho are mostly migratory (pers. commun. J. Connelly, IDFG; Connelly and Markham 1983, Gates 1983, Robertson 1991) and until radio-tagging studies indicate otherwise, we will address habitat needs of sage grouse assuming they are migratory. With this in mind, delineating nesting habitat using the 2-mile radius around an active lek must be applied with caution. This delineation may help to define areas of management emphasis but most remaining large tracts of sagebrush likely provide habitat. In addition, unless recent, intensive lek inventories have been completed historic leks will be used to define these important existing breeding areas where sagebrush vegetation is still dominant on the landscape. Idaho has large, remote areas of BLM-administered public lands that provide habitat but are difficult to inventory for sage grouse lek attendance.

2. Other Historic and Current Sage Grouse Observation Information

Besides leks, historic and current information on sage grouse observations associated with nesting, brood-rearing and wintering areas can be collated at the watershed scale, where available information from local citizens, agency files, and other sources should be used.

3. General Vegetation and Habitat Information

a. Breeding and Winter Habitats: At this scale sagebrush habitat availability and fragmentation patterns are important to consider in relation to the specific pasture or site you are evaluating. Refining the Sage Grouse Habitat Planning Map is important at this stage. Field Offices are not expected to do detailed vegetation mapping but rather make broad delineations based on readily available information. Efforts should be made to further delineate sagebrush steppe vegetation into the following cover types:

(1) **sagebrush/perennial grass areas:** areas with generally *at least* 5% sagebrush canopy cover and a native or seeded perennial grass understory,

(2) **sagebrush/annual grass areas:** areas with generally *at least* 5% sagebrush canopy cover and an annual grass unerstory,

(3) **perennial grasslands:** native or seeded grasslands with generally < 5% sagebrush canopy cover,

(4) **annual grasslands:** areas dominated by annual grasses with generally < 5% sagebrush canopy cover, and

(5) **juniper encroachment areas:** sagebrush or perennial grassland areas with juniper encroachment occurring.

There are a variety of information sources that can help delineate these areas and many are existing GIS data layers though availability varies between BLM Field Offices:

Ecological Site Inventory (ESI) maps
Soil maps
Historic wildlfires - files, maps and dates
Project files and maps of fire rehabilitation efforts
Fuels management files and maps
Project files and maps of land treatments (e.g., seeding and spraying projects)
Any available vegetation maps (e.g., GAP maps)
Aerial photography
Elevational models and topographic maps

b. Late Brood-rearing Habitat: A number of moist or mesic vegetation communities provide late-brood-rearing habitat. Sage grouse generally will move to higher elevations as summer progresses in search of succulent forbs and insects (Schroeder et al. 1999). For some areas this movement can be fairly dramatic (Connelly et al.1988, Connelly et al. *in press*). For other areas where nesting is occurring at higher elevations this movement may not be far. *At this scale it is important to delineate those brood-rearing areas on public lands that are potentially significant.* Field staffing constraints will limit ability

to evaluate *all* potential late-brood-rearing habitats so that identifying those of particular concern is important at this stage. Wet meadow complexes, sagebrush areas adjacent to agricultural fields, perennial streams, and lakes, ponds or lakebeds with sagebrush in close proximity are typical late brood-rearing habitats. Riparian and wet meadow areas within very steep canyons are not used by sage grouse and should not be considered brood-rearing habitat (pers.commun. J. Klott, BLM). Several information sources are important to use at this scale:

National Wetland Inventory (NWI) maps
Water rights files
Riparian Proper Functioning Condition (PFC) assessments and maps
Aerial photography, particularly color infra-red

Late brood-rearing habitats are diverse in terms of vegetation communities. The only common feature that distinguishes suitable brood-rearing habitats is that they are generally rich in forbs and insects (Schroeder et al. 1999, Connelly et al. *in press*). Soil disturbance may promote forbs over grasses and other rhizominous plants. However, this does not imply that riparian or wetland areas with downcutting, erosion and general dessication of the wetland or mesic community is preferred habitat for sage grouse (Connelly et al. *in press*). Availability of forbs in the late summer is the important common denominator of good brood-rearing areas.

At this scale existing information for certain late brood-rearing habitats can be used to improve efficiencies. Most perennial streams on BLM lands in Idaho have been evaluated for PFC with files and photographs (videography in some cases) available. In addition, water rights files contain pictures of developed and undeveloped water sources. This information should be reviewed to determine where field assessments may be warranted. Depending, existing information may be adequate for an assessment. *Generally, we will assume that riparian areas in PFC or functioning-at-risk with upward trend are meeting or moving towards meeting the habitat needs for sage grouse.*

4. General Land Use Information

At this scale some general public land use information can be helpful, dependent on the assessment needs. Such information includes, but not limited to:

Grazing allotment and pasture boundaries
Range improvement projects (e.g., spring developments, pipelines)
Developed recreation areas
Utility corridors
Military sites
Roads

5. Data Compilation

Preferably, as much of the fine-scale information as possible should be displayed on GIS-generated maps contingent on the availability of GIS support. Efforts to compile these data are ongoing throughout the State in cooperation with State and other federal agencies.

D. Project-level Information and Site Assessments

Project or site level assessments will involve either qualitative or quantitative data collection depending on management needs. The site level procedures are to be used for a variety of purposes including general habitat assessments to characterize current habitat conditions to project-specific evaluations that may be for an S&G evaluation of a grazing allotment, a proposed land exchange or proposed prescribed fire project.

Generally, allotment pastures will be a very important subset for any habitat assessment effort because:

a. Livestock stocking rates and seasons-of-use for individual pastures can affect existing sage grouse habitats. Habitat conditions within a particular cover type can vary greatly between pastures.

b. Livestock stocking rates and seasons-of-use for individual pastures can affect restoration potential and need to be considered in any restoration effort.

c. Pastures are the analysis unit for Rangeland S&G's already ongoing throughout Idaho and grazing decisions are usually specific to individual pastures.

1. Qualitative Versus Quantitative Assessment

This assessment framework allows considerable flexibility in data type and detail depending on local needs. Assessment field worksheets (Appendix B) can be filled out without quantitative data collection. While this flexibility is provided, biologists are encouraged to initially quantify all measurements to calibrate their visual estimation abilities. In addition, biologists should quantify their evaluations if issues for an area are complex or controversial. In these situations other information such as livestock utilization rates and patterns of use are important to also have. Random selection of evaluations sites is not required though for some areas this approach may be needed. In many cases, other data are available that should be used in conjunction with this evaluation process. By allowing for qualitative assessments, particularly for lower priority sites, more time and effort can be concentrated on in-depth assessments of the more complex areas. Site evaluation aids such as photo guides are being developed to assist in visual evaluations.

2. Site Selection

Information collated at the fine-scale level should be used to help select sites. However, at this level more detailed land use information should be reviewed prior to site selections, depending on needs. These information needs include, but are not limited to:

Area-specific fire and fire rehabilitation information
Livestock use information at the pasture level (class, stocking rates, season of use, utilization patterns)
Livestock watering sites in pasture or area of concern
Ecological Site Inventory data
Rangeland health and PFC assessments
Other land uses in the area of concern that may affect habitat conditions

Once the additional area-specific information is assembled for the area of concern, evaluation sites can be selected. The number of evaluation sites selected will vary depending on the landscape complexity and level of potential conflict. These sites should be selected by an interdisciplinary team. There are some general rules that will be followed in evaluation site location:

Breeding Habitat:

a. Sage grouse tend to nest more on flat to slightly sloping lands. Evaluation sites should not be located on steep slopes and slopes > 40% should not be considered nesting habitat (pers. commun., J. Connelly, IDFG).

b. Evaluation sites will be located at least 1/4 mile from livestock watering areas.

c. Where possible, existing key use areas set up for rangeland trend monitoring should be used but only if they're representative.

d. Generally, sage grouse nest in big sagebrush (*Artemesia tridentata spp.*). Small inclusions of big sagebrush within vast expanses of low sagebrush (*Artemesia arbuscula*) are common in many areas. These inclusions provide important nesting habitat while the surrounding low sagebrush sites may provide early brood-rearing habitat. In these situations it will be important to evaluate nesting conditions in the big sagebrush inclusions rather than the low sagebrush sites.

e. Where present, representative evaluation sites will be selected from the following major cover types (see Definition and discussion in previous section):

- sagebrush/perennial grass areas
- sagebrush/annual grass areas
- perennial grasslands
- annual grasslands
- juniper encroachment areas

Late Brood-rearing Habitat:

a. Important late brood-rearing sites identified at the mid-level should be evaluated. A variety of riparian, wetland and upland communities may provide brood-rearing habitat.

b. Riparian areas and wet meadows located in deep canyon areas will not be considered as late brood habitat (e.g., Bruneau River, Salmon Falls Creek, etc.).
c. Evaluation sites will not be located in designated livestock trailing stream crossings or water gaps.

Winter Habitat:

a. Low elevation, fragmented sagebrush areas may provide important winter habitat.

b. Winter and breeding habitat will overlap in many areas although low sagebrush areas associated with wind swept ridges are often used.

3. Evaluation Timing

Habitat assessments must be done at the proper time of year. For example, forbs in the sagebrush uplands are very important early in the year for nesting sage grouse hens and early broods. Forbs remain important through the summer though sage grouse will move to higher elevations and more mesic or wetland areas in search of forbs and insects.

Breeding Habitat: Habitat evaluations must be done in May-June as soon as broods are hatched. Timing within this 2-month time frame will vary depending on elevation and annual climatic conditions.

Late Brood-rearing Habitat: Evaluations must be done July - October, unless an adequate assessment can be done with existing data. Where late brood-rearing habitat may be a local habitat need or where controversy is anticipated, biologists are encouraged to conduct field assessments during the July-October period.

Winter Habitat: Evaluations can be done at any time since sagebrush distribution, cover and height are the only factors of concern.

Annual climatic conditions need to be noted on field forms. Winter and spring precipitation can affect annual forb abundance and cover during the breeding season.

4. Field Evaluation Matrices and Data Collection Methods

Field evaluation worksheets (Appendix B) for breeding, late brood-rearing and winter habitats were developed using the Sage Grouse Management Guidelines (Connelly et al., *in press*). For the purpose of standardizing evaluations, discrete ranges of numeric values were used for some habitat indicators to define suitable, marginal and unsuitable habitat. Suitable habitats meet the protective cover (sagebrush and herbaceous indicators) and food (forb indicators) needs of sage grouse while marginal and unsuitable habitat do not. Late brood-rearing and winter habitat matrices are mostly qualitative, emphasizing the need for succulent forbs during the summer and diversity of sagebrush densities and heights in the winter.

It is important to note that not all the indicators need to be in the "suitable habitat" category for a site to be considered as suitable. For example, if a site had suitable breeding habitat conditions for all indicators except sagebrush canopy cover (site had 30% canopy cover) then a site rating of suitable would be appropriate. However, if a site had suitable habitat conditions for all indicators except sagebrush canopy cover was only 5% then this site would be unsuitable since sage grouse must have sagebrush for nesting. Overall site evaluations will be based on best professional judgement with interdisciplinary involvement.

Quantitative field evaluation methods for the habitat indicators (canopy cover measurements, height measurements, etc.) are provided in Appendix C. These methods are consistent with guidance developed by an interagency technical team for rangeland vegetation monitoring (USDI 1996) and Field Office staffs are encouraged to reference this publication for additional guidance.

a. Breeding habitat: Nesting cover and food availability are key components of breeding habitat suitability. Generally, sagebrush stands with a robust understory of grasses and forbs provide excellent sage grouse habitat (Table 1).

Table 1. Nesting and early brood-rearing habitat features and indicators for the habitat assessment matrix.

Habitat Feature	Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Nesting Cover	Big sagebrush canopy cover	≥ 15% but ≤ 25%	10-14% or 26-35%	<10% or >35%
Nesting Cover	Big sagebrush height	15-30 inches	10-14 inches or 31-40 inches	<10 inches or > 40 inches
Nesting Cover	Big sagebrush growth form	Spreading form, few if any dead branches	Mix of spreading and columnar growth forms present	Tall, columnar growth form with dead branches
Nesting Cover	Herbaceous perennial grass and forb height	≥ 7 inches	5 - <7 inches	< 5 inches
Nesting Cover & Food	Perennial grass canopy cover	≥ 15%	5 - 14%	<5%
Nesting Cover & Food	Forb canopy cover	≥ 10%	5 - <10%	<5%
Food	Forb richness[1]	High	Low	Very low

[1]Relative to ecological site descriptions.

At this time it will be important to record any site potential considerations that affect suitability. There will be areas that have suitable sagebrush cover but soil conditions and/or dominant grasses provide for unsuitable nesting conditions (e.g., dominant grasses such as Sandberg's bluegrass (*Poa sandbergii*) may not have the growth form to meet perennial herbaceous height criteria). The evaluation worksheets provide for these notations, which will be very important later when evaluations are summarized at the project area level. Adequate justification as to site potential problems must be provided.

At least one field worksheet (Appendix B) will be filled out for each of the major cover types present within the project area of concern. If the area of concern has more than one pasture then at least one worksheet per cover type per pasture is required.

b. Late Brood-rearing Habitat: Food availability (forbs) is the primary habitat feature of importance to sage grouse brood-rearing areas. Healthy riparian, wet meadow and upland plant communities are important where these habitats provide the brood-rearing habitat. Forb abundance, diversity and availability are crucial. Agricultural fields can provide important sage grouse brood-rearing

habitat if good escape cover is nearby (Connelly et al. *in press*). In these cases sagebrush cover on adjacent BLM-administered lands will be the important habitat indicator. However, proximity of good escape cover is important for all brood-rearing areas.

Table 2. Late brood-rearing habitat features and indicators for the habitat assessment matrix.

Habitat Feature	Indicator	Suitable Habitat	Marginal	Unsuitable Habitat
Food	Riparian and wet meadow plant community	Mesic or wetland plant species dominate wet meadow or riparian area	Xeric plant species invading wet meadow or riparian area	Xeric plant species along water's edge or near center of wet meadow
Cover and Food	Riparian and wet meadow stability	No erosion evident; some bare ground may be evident but vegetative cover dominates the site	Minor erosion occurring and bare ground may be evident but vegetative cover dominates the site	Major erosion evident; large patches of bare ground
Food	Forb availability in uplands and wetland areas	Succulent forbs are readily available in terms of distribution and plant structure	Succulent forbs are available though distribution is spotty or plant structure limits effective use	Succulent forbs are not available due to site condition or plant structure
Cover	Proximity of sagebrush cover	Sagebrush cover is adjacent (< 100 yards) to brood-rearing area	Sagebrush cover is in close proximity (100 - 300 yards) of brood-rearing areas	Sagebrush cover is unavailable (> 300 yards).

Field worksheets (Appendix B) will be filled out for areas that were identified as important late brood-rearing areas during the watershed or fine-scale review. Recent, existing information (e.g., PFC assessment and photographs)should be used in conjunction with a field assessment and in some cases can be used instead of a field visit, where appropriate. However, availability of forbs during the summer and fall is the primary habitat feature of concern for these brooding areas and site visits are encouraged.

c. Winter Habitat: Sagebrush cover and availability during the winter are the most important habitat indicators for the food and cover needs of sage grouse (Table 3). Topographic features can provide additional variety of habitats.

Table 3. Winter habitat features and indicators for the habitat assessment matrix.

Habitat Feature	Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Cover and Food	Sagebrush canopy cover	10-30%	5- 9% or >30%	< 5%
Cover and Food	Sagebrush height	Normal height relative to site potential	Hedged shrubs, slightly shorter relative to site potential	Severely hedged shrubs and short relative to site potential

Field worksheet (Appendix B) can be filled out at any time and should, in many areas, use the same data set as that collected for the breeding habitat matrix. Wintering areas identified at the watershed or fine-scale should be evaluated. Breeding and winter habitat will overlap in many areas. It will be important to remember in these areas that sagebrush cover needs in the winter are slightly different than during the breeding season. An area with sagebrush canopy cover exceeding 30% may not provide suitable nesting habitat but may provide important, suitable winter habitat.

5. Organizing Site Evaluations at the Project Area Level

For many public land uses (e.g., livestock grazing permits, habitat restoration projects) organizing the site assessments for the project area will be needed. For small or vegetatively uniform pastures one or two field evaluation sites will adequately characterize current habitat. However, for large and/or complex pastures multiple site evaluations may be necessary. It is important to remember that the purpose of these evaluations is to not only evaluate existing conditions but also provide information on restoration needs. An unsuitable rating for a pasture is not necessarily a "bad" evaluation or a negative reflection on management. For example, using this assessment process, a fire rehabilitation seeding with suitable grass and forb cover but unsuitable sagebrush cover would be classified as currently unsuitable sage grouse habitat. However, the habitat assessment would also indicate that the area may be a priority restoration site for sagebrush seeding. The fact that the grass and forb cover are in the suitable range also may indicate that livestock stocking rates and/or season-of-use would complement restoration goals and expenditure of restoration funds.

At this level organizing evaluations by seasonal use periods (breeding, late brood-rearing and wintering habitats), cover type and pasture is appropriate. Summary forms in Appendix D are provided to help in this regard.

IV. Data Management

As assessments are completed, information will be summarized at the District level. Habitat assessment progress will be collated on a state-wide basis annually concurrently with updating the sage grouse habitat planning map. This reporting process and a GIS-based data management system will be developed during FY 2000 while this framework is being field tested and reviewed.

V. Use of Assessment Framework in Decision-Making Processes

The purposes of and uses of this framework are to:

1. Identify important remaining sage grouse habitat areas and priority habitat restoration areas.

2. Evaluate and document existing sage grouse habitat suitability and habitat restoration needs.

3. Assist in evaluating land uses on public lands that may affect sage grouse habitat conditions or habitat restoration efforts.

4. Assist in evaluating attainment of pertinent land use plan objectives and Standard 8 of Idaho's Standards for Rangeland Health for sage grouse.

All Field Offices will use this assessment framework for subbasin reviews, watershed analyses, S&G evaluations, LUP evaluations, or any proposed projects that may affect existing or potential sage grouse habitat. Overall goals, consistent with LUPs and BLM policies will be to (1) protect and maintain existing suitable habitats, (2) improve degraded habitats to suitable conditions, and (3) restore habitats to suitable conditions, where most feasible and important for long-term recovery.

This habitat assessment framework does not address potential land uses that may directly affect the birds or their behavior and use of areas (e.g., transmission line mortalities, structures in or near leks or wintering areas that may provide perch sites for raptors). Additional instructions will be provided for these types of land uses and related potential effects.

VI. Definitions

Annual Grassland: Areas dominated by either cheatgrass or medusahead rye generally with less than 5% shrub canopy cover present.

Breeding Habitat: Leks, nesting and early brood-rearing occur in breeding habitats (Connelly et al. *in press*).

Condition: The state of historical, current, or potential elements. May be a quantitative or qualitative descriptor.

Habitat Indicator: Component or attribute of habitat that can be observed and/or measured that provides evidence of habitat suitability.

Juniper Encroachment Areas: Sagebrush or perennial grassland areas with juniper encroachment occurring.

Key Habitat Areas: These are generally large-scale, intact sagebrush steppe areas that provide sage grouse habitat. Term is used specifically for the Sage Grouse Planning Map.

Land Use Plan: Land use plans means a resource management plan or management framework plan, developed under the provisions of 43 CFR 1600. These plans are developed through public participation in accordance with the provisions of the Federal Land Policy and Management Act of 1976 and establish management direction for resource uses of public lands (43 CFR 4100).

Late Brood-rearing Habitat: Variety of habitats used by sage grouse from late June to early November. Habitats used include, but not limited to, meadows, farmland, riparian areas, dry lakebeds, sagebrush areas (Connelly et al. *in press*).

Lek: Breeding display area. For sage grouse, leks are usually open areas surrounded by sagebrush (Connelly et al. *in press*).

Perennial Grassland: Area dominated by perennial native or introduced grasses with generally less than 5% canopy cover of shrubs.

Proper Functioning Condition: Lentic riparian areas are functioning properly when adequate vegetation, landform, or debris is present to: dissipate energies associated with wind action, wave action, and overland flow from adjacent sites, thereby reducing erosion and improving water quality; filter sediment and aid floodplain development; improve flood-water retention and ground water recharge; develop root masses that stabilize islands and shoreline features against cutting action; restrict water percolation; develop diverse ponding characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterbird breeding , and other uses; and support greater biodiversity (USDI 1999).

Potential: (a) Capable of being, but not yet in exisitence; latent. (b) The ecological community that would be established if all successional sequences of its ecosystem were completed without additional human-caused disturbance under present environmental conditions; often referred to as "potential natureal community." (DOA/DOI, Regional Ecosystem Office 1995).

Sagebrush Areas: Areas with generally at least 5% sagebrush canopy cover.

Umbrella Species: Species with large area requirements, which if given sufficient protected habitat area, will also provide habitat for many other species (Noss 1990).

Watershed: Any area of land that drains to a common point. A watershed is smaller than a river basin or subbasin, but it is larger than a drainage or site. The term generally describes areas that result from the first subdivision of a subbasin, often referred to as a "fifth field watershed" (DOA/DOI, Regional Ecosystem Office 1995).

Winter Habitat: Sagebrush habitats that provide access to food and cover during the winter (Connelly et al. *in press*).

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Appendix A

Sage Grouse Habitat Planning Map Directions

Appendix A

Sage Cocoa Habitat Planning Map Directions

SAGE GROUSE HABITAT PLANNING MAP

Objective

Create a relatively simple, widely applicable landscape-scale habitat map showing sage grouse distribution and general habitat conditions, using available information.

Purpose and Need

Concerns over sage grouse population trends and habitat quality or quantity have increased. Habitat mapping efforts have occurred or are occurring in certain areas, but techniques, scales, time-frames, and resolutions vary. Vast areas remain unmapped in terms of a consistent methodology that transcends administrative boundaries.

There is an immediate need for a single, overall spatial portrayal of general sage grouse habitat conditions in order for conservation planning to move forward. At present, it is not practical to wait for completion of vegetation mapping efforts before such a landscape-scale, general habitat map is created.

The Sage Grouse Habitat Planning Map will serve several purposes including:

1. Assisting field staff to quickly identify areas that sage grouse will be of primary concern, and those areas where sage grouse will not be an issue,

2. Generally outlining areas in need of restoration with respect to sage grouse habitat quality,

3. Serving as a tool for planning and prioritizing fire suppression, fuels management and prescription activities at the Field, District and State Office levels,

4. Graphically portraying the degree of sage grouse habitat fragmentation on the landscape,

5. Providing large scale information at the State-wide level on habitat conditions after merging of Field Office maps; and

6. Serving as an educational tool for explaining current sage grouse habitat conditions to resource users, cooperators, and interested parties.

Habitat Definitions with General Management Recommendations

Key Habitat Areas: These are generally large-scale, intact sagebrush steppe areas that provide sage grouse habitat. Small inclusions of perennial grasslands, either native or introduced, or other habitats (e.g., mountain mahogany) may be present.

Management recommendation: These areas are extremely important to protect from wildfire. Habitat conditions should be improved, where needed.

Note: Key Habitat Areas will, in many cases, encompass the extent of the circles created by inscribing the 2-mile buffer around leks or lek complexes, but may also include areas of intact habitat well beyond or between the buffer zones. In some cases, biologists may suspect sage grouse occupancy but documentation is lacking; this should not preclude classification as Key Habitat. Local biologists should use professional judgement in determining the extent of the habitat polygons in such cases, with an explicit goal of conserving occupied and potentially occupied sage grouse habitat.

Restoration Habitats:

Restoration Type 1 (R1): Sagebrush-limited areas with acceptable understory conditions in terms of grass species composition. Includes native and seeded perennial grass rangelands.

Management Recommendation: Areas are very important to protect from wildfire and maintain or restore sagebrush and forb communities, where needed. Restoration costs are relatively inexpensive for these areas.

Note: Such areas are often a result of wildfires or seedings.

Restoration Type 2 (R2): Existing sagebrush cover in these areas may or may not be adequate to meet the needs of sage grouse, but understory herbaceous conditions are poor. Undesirable plant species such as cheatgrass (*Bromus tectorum*), medusahead rye (*Taeniatherum caput-medusae*) or other exotic plants are common to dominant. Expensive management treatments are needed for restoration.

Management Recommendation: Management treatments, such as prescribed fire, chemicals, or seeding are encouraged for certain R2 areas, contingent on site-specific analysis. Opportunities also exist for managing wildfire via Appropriate Management Response to achieve restoration objectives. Restoration can be very expensive.

Note: These areas often result initially from the expansion of invasive exotic herbaceous species into native or marginal seeded rangelands, and are then exacerbated and eventually maintained by frequent wildfire. Lack of direct management intervention will likely lead to perpetual dominance by the invasive species, a shortening of fire return intervals, and loss of shrubs, depending on the site.

Juniper encroachment areas (R3): Sagebrush areas that have juniper encroachment dominate the landscape.

Management Direction: Opportunities exist for improving sage grouse habitat quality and quantity through the use of Appropriate Management Response to wildfire, prescribed fire, chemical or mechanical means. Follow-up rehabilitation with seeding or chemicals may or may not be necessary, contingent on site-specific conditions.

Note: Some sage grouse habitats occurring at or near the sagebrush-steppe-juniper woodland interface are at risk to juniper encroachment or have already been rendered unsuitable for sage grouse due to juniper expansion. Retarding juniper expansion in such situations, with a goal of shrub-steppe restoration, may be advisable.

Linkage Habitat Corridors or areas joining Key and/or Restoration Habitats, through which sage grouse currently move or may eventually move or occupy.

Management recommendations: Protection from wildfire is extremely important for these linkage areas. Restoration efforts in Linkage Habitats, where needed, should be a priority emphasis.

Note: Certain areas or corridors may be used or hypothesized to be used primarily as movement corridors by sage grouse; or could be used as such if habitat conditions were adequate. Linkage areas are of particular concern to migratory sage grouse populations, which may winter and summer in areas separated by vast distances. Protection of intervening corridors may be important, even though breeding-nesting-brood rearing may not occur or have been documented there. The Linkage concept also has merit with respect to non-migratory (resident) sage grouse populations in fragmented habitats. Linkage habitats may not be relevant in all areas (e.g. large, contiguous shrub-steppe habitats), hence their inclusion in the map is contingent on recommendations by local biologists. In general, most linkage habitats will likely be characterized as one or more Restoration types or possibly as Key Habitat. Thus, in delineating a Linkage polygon,, it is important to first describe the appropriate habitat quality category (Key Habitat Area, R1, R2, R3); then, crosshatch or otherwise flag the particular Linkage polygon(s).

Map Preparation Process

1. Compile up-to-date sage grouse lek maps, data, and 1:100,000 land status maps. It is extremely helpful, but not necessary, to have these data available at the same scale (1:100,000) and a GIS plot of all historic and occupied leks. The term *occupied lek* as defined here is one where at least one strutting male has been documented in at least one of the past five years. While the *Guidelines for Management of Sage Grouse Populations and Habitats* (Connelly et al. *in press*) define an occupied lek as one attended by *two* or more males, in at least *two* of the past five years, this definition may be too restrictive in certain situations. Often it is logistically impossible to visit all leks each year, resulting in incomplete data. In a given five-year span, a particular lek may be visited only occasionally, in some cases only once or twice depending on accessibility. In other situations, especially at smaller leks, where counts of males have been in decline, documentation of even one male may be useful in describing the current distribution of breeding activity and delineation of associated habitats.

A 2-mile (3.2 km) radius around each lek, via GIS, helps to portray use *areas* as opposed to points (leks), and is a useful means of showing the general extent of potentially occupied breeding-early brood habitat, particularly for non-migratory populations. In addition, plotting the circular area for *occupied* leks using a distinguishing color (e.g. red) further helps to identify currently occupied areas from historically occupied areas. Since most sage grouse in Idaho are or may be migratory, biologists should use available data and professional judgement in defining Key Habitat Areas and not limit their delineation to the 2-mile radius around known historic and current leks.

2. Meet with local federal and state biologists to delineate existing Key Habitat Areas, Restoration and Linkage Habitat polygons onto the 1:100,000 land status maps. The intent is to develop a broad, landscape-scale map so polygons will usually be very large depending on habitat heterogeneity and the biologist's knowledge of the area. Landscapes with a fragmented ownership pattern or complex mix of rangeland-agricultural interfaces may include smaller polygons, as deemed appropriate.

3. After delineating polygons, coordinate with GIS staff to create mylars and digitizeor scan the polygons into a GIS. Create one theme for the Linkage polygons, and one encompassing the exist habitat and restoration polygons. This will allow users to overlay Linkage areas onto the existing habitat and restoration habitat polygons, as needed. For consistency between Field Offices, color code Key Habitat Areas as Red; R1 habitats as light green; R2 habitats as medium green; R3 habitats as dark green; and linkage zones as crosshatching. Field Office GIS staff should coordinate closely, to ensure the use of identical colors, layouts etc. to facilitate merging of maps at District and Statewide scales.

4. Develop and plot planning maps at appropriate scales, (1:100,000 scale or higher). Since the map polygons were initially delineated at 1:100,000 scale, and specific polygon boundaries are thus somewhat subjective, creation of finer scale (e.g. 1:24,000) maps will proportionally amplify errors. Additional detail can be added at finer scales (e.g., delineating sagebrush-dominated annual grasslands from annual grasslands without shrubs).

5. Store GIS data and 1:100,000 maps in safe, accessible location. These maps will be updated annually to incorporate new habitat information, make corrections and changes due to fires or other land use changes.

Appendix B

Field Assessment Worksheets

Sage Grouse Habitat Assessment Worksheet - Breeding Habitat

Date:	Project or Allotment Name/#:	
Pasture Name/#:	Site #:	FO:
Legal Description: T. R. Section , 1/4, 1/4, 1/4		GPS File #:
Other Location Info:		
Evaluator(s):	HUC #:	
Cover Type (circle one): Sagebrush, Perennial Grassland (native, introduced), Annual Grassland with Sagebrush, Annual Grassland, Juniper Area		

Habitat Indicator	Suitable Habitat	✓	Marginal Habitat	✓	Unsuitable Habitat	✓
Average Big Sagebrush Canopy Cover	≥ 15% but ≤ 25%		10-14% or 26-35%		<10% or >35%	
Average Big Sagebrush Height	15-30"		10-14" or 31-40"		<10" or > 40"	
Big sagebrush growth form	Spreading form, few, if any, dead branches for most plants		Mix of spreading and columnar growth forms present		Tall, columnar growth form with dead branches for most plants	
Average herbaceous grass and forb height	≥ 7"		5 - 7"		< 5"	
Average grass canopy cover	≥ 15%		5 - 14%		<5%	
Average forb canopy cover	≥ 10%		5 - 9%		<5%	
Forb richness[1]	High		Low		Very low	
Overall Site Evaluation						

Comments:

[1]Relative to site potential and site guides.

General Directions:

1. Sites should be located on flat to slightly sloping lands. Slopes greater than 40% are unsuitable nesting habitat.

2. Breeding habitat must be evaluated as close to the end of nesting as possible (May- June). For low elevation areas this will be May, for higher elevation areas it will be June.

3. Precipitation can affect annual forb growth - if precipitation is an interpretation factor then this should be noted in the comment section.

4. Good nesting habitat may be provided disproportionately in small inclusions of big sagebrush surrounded by low sagebrush. In these situations nesting conditions should be measured in the big sagebrush patches. However, the low sagebrush community likely provides important pre-nesting and early brood-rearing habitat and should be evaluated for the forb composition indicators (canopy cover and diversity).

Worksheet Directions:

1. Fill out all site location information at top of sheet.

2. **HUC #:** Use 5th field hydrologic unit.

3. Each indicator must be marked as either suitable, marginal or unsuitable. Numeric values should be written when quantitative data are collected. Qualitative evaluations should only have a ✓ in the box.

4. If site potential is a factor for an indicator being either marginal or unsuitable put an asterisk (*) by the indicator and discuss in the comments section. Referencing site potential as per the site guides is recommended.

5. Overall site evaluation is based on professional judgement, not all indicators need to be in the suitable range for an overall suitable evaluation. Where needed, explain rationale in comments section.

6. If site potential is a factor for an overall evaluation of marginal or unsuitable put an asterisk(*) after "Overall Site Evaluation" in the last row. Explain rationale in notes section.

7. Complete the **Site Forb Abundance Form.**

8. Attach field data sheet(s) used for this site evaluation.

Sage Grouse Habitat Assessment Worksheet - Late Brood-rearing

Date:	Project or Allotment Name/#:				
Pasture Name/#:	Site #:	FO:			
Legal Description: T. R. Section , 1/4, 1/4, 1/4	GPS File #:				
Evaluator(s):	Other Location Info.:				
Site Description:	HUC #:				

Habitat Indicator	Suitable Habitat	✓	Marginal Habitat	✓	Unsuitable Habitat	✓
Riparian and wet meadow plant community	Mesic or wetland plant species dominate wet meadow or riparian area		Xeric plant species invading wet meadow or riparian area		Xeric plant species along water's edge or near center of wet meadow	
Riparian and wet meadow stability	No erosion evident; some bare ground may be evident but vegetative cover dominates the site		Minor erosion occurring and bare ground may be evident but vegetative cover dominates the site		Major erosion evident; large patches of bare ground	
Forb availability in uplands and wetland areas	Succulent forbs are readily available in terms of distribution and plant structure		Succulent forbs are available though distribution is spotty or plant structure limits effective use		Succulent forbs are not available	
Proximity of sagebrush cover	Sagebrush cover is adjacent to brood-rearing area (<100 yards)		Sagebrush cover is in close proximity (> 100 yards but < 300 yards) of brood-rearing areas		Sagebrush cover is unavailable (> 300 yards).	
Overall Site Evaluation						

Comments:

General Directions:

1. Worksheet should be filled out for areas identified as important late brood-rearing habitats during fine-scale review.
2. Riparian areas and wet meadows located in deep canyon should not be considered brood-rearing habitat.
3. Evaluation sites should not be located in designated livestock stream crossings or water gaps.

Worksheet Directions:

1. **Site Description**: Identify what type of habitat is being evaluated: riparian area, wet meadow, lakebed, sagebrush area adjacent to agricultural field, etc.
2. **HUC #:** Use 5th field hydrologic unit (watershed).
3. Put a ✓ in the appropriate suitability category for each indicator that best describes the site.
4. **Forb availability and plant structure**: In some cases forbs may be present on the site but trampling or grazing intensity may affect availability.

Sage Grouse Habitat Assessment Worksheet - Winter Habitat

Date:			**Project or Allotment Name/#:**			
Pasture Name/#:			**Site #:**		**FO:**	
Legal Description: T. R. Section , 1/4, 1/4, 1/4					**GPS File #:**	
Evaluator(s):			**Other Location Info.:**			
Site Description:					**HUC #:**	
Habitat Indicator	**Suitable Habitat**	✓	**Marginal Habitat**	✓	**Unsuitable Habitat**	✓
Sagebrush canopy cover	10-30%		5- 9% or >30%		< 5%	
Sagebrush height (availability during the winter)	Generally tall or a diversity of sagebrush heights present relative to species and site potential		Some tall plants but generally more moderate to short plants relative to species and site potential		Poor height diversity with generally short plants relative to species and site potential	
Overall Site Evaluation						
Comments:						

General Directions:

1. Form should be completed for areas that were identified as winter areas during the fine-scale review.

Worksheet Directions:

1. **Site Description:** provide a brief description of the site.

2. **HUC #:** Use 5th field hydrologic unit.

3. **Sagebrush Canopy Cover:** Insert the canopy cover into the appropriate suitability box. If it was measured using line intercept or line point transect put in the measured value. If you visually estimated the percent then use the ✓.

4. **Sagebrush Height:** Measuring sagebrush heights above the snow during the winter would be difficult for many areas. Since the evaluation site is located in a known or suspected wintering area sagebrush heights in the area relative to sagebrush species and ecological site is an important habitat indicator. Put a ✓ in the appropriate suitability category that best describes the site.

Appendix C

Field Methods and Data Forms

Protocol for Line Intercept Transect and Daubenmire Frames

Equipment:

Data Forms and Worksheets
Tape, 100-foot
Stakes for tape (at least two spikes; old, medium-large screwdrivers work well)
Daubenmire frame 20 x 50 cm
Yardstick (for measuring shrub and grass/forb heights)
Compass
Random numbers table, wristwatch with second hand, or calculator with random function etc.
Camera and print film, extra camera battery; extra film.
Photo cards and markers; or small dry-erase board and marker
Topographic map with project area, general cover types, and pasture boundaries delineated
Aerial photographs
Soil Survey/Ecological Site Guides
GPS unit
Pencils
Colored pencils for sketching plant communities
Calculator

Protocol:

1. Sites have been selected stratified by major cover type and pasture (see framework document for directions).

2. Randomly select a compass azimuth, using a random numbers generator, wristwatch with second hand, or other objective means. Make sure transect is at least 0.25 miles from disturbances such as roads, water sources etc.

3. Anchor a 100-foot tape with a stake (spike, screwdriver, etc.) and extend it snugly along the random azimuth. Secure end with a second stake.

4. As a minimum, accurately locate the transect's location on a 1:24000 USGS map. Use GPS and differentially correct if at all possible. It will be important to be able to return to the area for follow up monitoring or photos in some instances.

5. On the data form, record shrub canopy cover by species using the line intercept method. Record cover increments to the nearest 0.1 ft. Record only live (green) canopy. Ignore spaces or gaps in the canopy less than 2 inches across. Gaps in the live canopy in excess of 2 inches will not be included as canopy intercepts. It may also be helpful to separately record dead/decadent shrub cover if it appears to be a significant component of the community; however only live sagebrush cover will be of consequence to the habitat assessment for sage grouse.

6. At each 5-foot increment along the tape:

   a. Place a 20 x 50 cm Daubenmire frame (n=20 plots per transect). For each plot, estimate and record cover for perennial grasses, annual grasses, perennial forbs, annual forbs. Note predominant species.

   b. Record to the nearest inch the **maximum height** of the nearest sagebrush plant.

c. At each 5-foot increment point record the maximum "natural" height of the **nearest** perennial grass **or** perennial forb plant part within a 2.5-foot, 180° arc around the point that ends at the tape line. If no plants are within this arc then record a dash and move on to next point. [Natural = the highest point of a leaf or seed stalk is measured with no straightening by the observer]

7. Summarize data at the bottom of each form.

8. Photographs. At least one photograph must be taken at each transect/ evaluation area. Photos will prove invaluable in locating evaluation areas in subsequent years. They will also be of substantial utility in the office when preparing evaluation documents and documenting habitat condition.

a. Complete a Photo Card, showing, as a minimum, the date, location, allotment, and sagebrush canopy cover percentage.

b. With the photo card near the "zero" end of the tape, take a general photo of the area, sighting down the tape from eye level, showing landmarks in the background, if possible.

c. In a representative location along or near the tape, place the photo card near the base of a sagebrush plant, and take a tangential close-up photo from near ground level (2-3 ft) toward the shrub/ground interface, to document herbaceous conditions and cover.

d. Optional: take one or more other close-ups or panoramic photos as needed.

9. Depending on the complexity of the evaluation area, several line transects within a cover type may be necessary to characterize the area using this technique.

10. Complete the **Site Forb Abundance Form.**

Line Intercept and Daubenmire Frame Data Form for Sage Grouse Evaluations

Date:	Project or Allotment Name/#:	
Pasture Name/ #:	Site #:	FO:
Legal Description: T. R. Section , 1/4, 1/4, 1/4		GPS File #:
Other Location Info.:		
Examiner(s):	Transect Length:	Permanent Transect?:

Shrub Line Intercept Canopy Cover

Shrub Species	Intercept (feet)	Total	% Cover
	All Shrubs		

Daubenmire Cover Class & Vegetation Height Data (recorded at 5-foot intervals)

Cover Type	Estimated Cover Class for Each Plot*																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Perennial Grass																				
Annual Grass																				
Perrenial Forb																				
Annual Forb																				

*Cover Classes: **1**=0-5%, **2**=6-15%, **3**=16-25%, **4**= 26-50%, **5**=51-75%, **6**=76-95%, **7**=96-100%

Cover Type	Vegetation Height for Each Plot (record to nearest 1 inch)																			
Big Sagebrush																				
Other Sagebrush spp.																				
Perennial Grass																				
Perennial Forb																				

Summary

Cover Class:	Big Sagebrush:	Other Sagebrush:	P. Grasses:	A. Grasses:
	Perennial Forbs:	Annual Forbs:		
Vegetation Height:	Big Sagebrush Mean Ht.		All Shrubs Mean Ht.:	
	Perennial Grass Mean Ht.:		Perennial Forb Mean Ht.:	

Line-Point Intercept Method (transect or step-point techniques)

Equipment:

Data Forms and Worksheets
Tape, 100-foot (optional)
Stakes for tape (at least two spikes; old, medium-large screwdrivers work well)
Pin flag or Pointer: straight piece of wire or rod at least 30" long and less than 2.5mm in diameter
Yardstick (for measuring shrub and grass/forb heights)
Compass
Random numbers table, wristwatch with second hand, or calculator with random function etc.
Camera and print film, extra camera battery; extra film.
Photo cards and markers; or small dry-erase board and marker
Topographic map with project area, general cover types, and pasture boundaries delineated
Aerial photographs
Soil Survey/Ecological Site Guides
GPS unit
Pencils
Colored pencils for sketching plant communities
Calculator

Protocol:

Sites have been stratified by major cover types and pastures prior to field evaluation (see framework document for more directions).

If you use a tape:

1. Anchor the tape with a steel pin and pull tape out 100 feet. Keep tape as taught and straight as possible. Anchor tape on far end.

2. Begin at "0" end of tape.

3. Every 2 feet drop the pin flag or pointer to the ground so that it falls precisely vertically and touches the near side of the tape at the correct mark (every 2 feet for 50 marks).

4. Record the lifeform (codes at bottom of form) of the herbaceous plants and species of sagebrush with the highest live leaf or stem touching the pin to the nearest inch. Record only live canopies of shrubs and live or residual herbaeous plants.

5. If the pin is dropped within the canopy of a live sagebrush plant record the **maximum height** for that shrub.

6. Record the heights of the live or residual herbaceous plants that touch the pin.

7. Record the lifeform and height of the plant with next highest live or residual leaf or stem touching the pin. Record these under the "Lower Layers" columns.

8. Repeat Step 7 for all liveor residual canopy, recording each lifeform of interest only once.

9. Proceed to next intercept and repeat. Fifty sample points are the minimum recommended number for fairly homogenous vegetation. More pointsmay be needed for hetereogenous vegetation.

10. Summarize data at the bottom of each form.

11. Photographs. At least one photograph must be taken at each transect/ evaluation area. Photos will prove invaluable in locating evaluation areas in subsequent years. They will also be of substantial utility in the office when preparing evaluation documents and documenting habitat condition.

a. Complete a Photo Card, showing, as a minimum, the date, location, allotment, and sagebrush canopy cover percentage.

b. With the photo card near the "zero" end of the tape, take a general photo of the area, sighting down the tape from eye level, showing landmarks in the background, if possible.

c. In a representative location along or near the tape, place the photo card near the base of a sagebrush plant, and take a tangential close-up photo from near ground level (2-3 ft) toward the shrub/ground interface, to document herbaceous conditions and cover.

d. Optional: take one or more other close-ups or panoramic photos as needed.

12. Complete the **Site Forb Abundance Form.**

If you use step-point method:

1. Mark the starting point with a steel post or pin and record compass bearing.

2. Determine the number of paces between points prior to starting. If the area you are evaluating is large then you may want to have more paces between points in order to cover more land area.

3. Select a focal point on the horizon to focus on.

4. Take the selected number of paces toward the focal point staying on a straight line. You must walk in a straight line through sagebrush or other shrubs. If this is difficult to do, it's recommended that you use a tape to help you stay on a straight line. Drop the pin flag just out from the tip of your foot so that it falls precisely vertical.

5. Follow direction 4-12 under the above line transect directions.

Line Point Transect Data Form for Sage Grouse Evaluations

Date:	Project or Allotment Name/#:	
Pasture Name/ #:	Site#:	FO:
Legal Description: T. R. Section , 1/4, 1/4, 1/4		GPS File #:
Cover Type:	Tape or Pace Transect? (circle one)	
Examiner(s):	Location Info.:	

Points	Top Layer		Lower Canopies			
			Layer 2		Layer 3	
	Hits	Heigh	Hits	Heigh	Hits	Heigh
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Points	Top Layer		Lower Canopies			
			Layer 2		Layer 3	
	Hits	Heigh	Hits	Heigh	Hits	Height
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						

BSW = Wyoming big sagebrush	**BSM** = Mountain Big Sagebrush	**BSB** = Basin Big Sagebrush	**LS** = Low Sagebrush
Hits_____, %_____, Ht.*_____	Hits_____, %_____, Ht.*_____	Hits_____, %_____,Ht.*_____	Hits_____, %_____, Ht.*_____
PG = Perennial Grass	**AG** = Annual Grass	**PF** = Perennial Forb	**AF** = Annual Forb
Hits_____, %_____, Ht.*_____	Hits_____, %_____,	Hits_____, %_____, Ht.*_____	Hits_____, %_____,

* Average height recorded here.

Site Forb Abundance Form for Sage Grouse Evaluations

Date:	Project or Allotment Name/#:					
Pasture Name/ #:		Site#:		Examiner(s):		
Legal Description: T. R. Section , 1/4, 1/4, 1/4				GPS File #:		
Species	**Rare**	**Sparse**	**Scattered**	**Common**	**Abundan**	**Dominant**
Sage Grouse Preferred Forbs:						
Broomrape (*Orobanche* spp.)						
Composites						
Daisies (*Erigeron* and *Aster* spp.)						
Dandelion, C.(*Taraxacum officinale*)						
Dandelion, Mt. (Agoseris spp.)						
Hawksbeard (*Crepis* spp.)						
Microsteris (*Microseris* spp.)						
Prickly lettuce (*Lactuca serriola*)						
Salsify (*Tragopogan dubius*)						
Desert-parsley (*Lomatium* and *Cymopterus*						
Everlasting (*Antennaria* spp.)						
Groundsmoke (*Gayophytum* spp.)						
Knotweed (*Polygonum* spp.)						
Legumes (other than *Lupinus* spp.)						
Alfalfa (*Medicago* spp.)						
Bird's foot tre-foil *(Lotus* spp.)						
Clover (*Trifolium* spp.)						
Sweet clover (*Melilotus* spp.)						
Sweet vetch (*Hedysarum* spp.)						
Vetch (*Vicia* spp.)						
Milkvetch (*Astragalus* spp.)						
Peppergrass (*Lepidium* spp.)						
Phlox (*Phlox* spp.)						
Prairie star flower (*Lithophragura* spp.)						
Yarrow (*Achillea millifolium*)						
Other Forbs:						

Directions:

1. Walk around an area generally the size of a 100-foot radius circle and observe the relative abundance of forbsbased on the following ratings:

Rare:	Less than 5 plants
Sparse:	5-25 plants
Scattered:	26-50 plants
Common:	51-100 plants
Abundant:	+ 100 plants
Dominant:	Very few other species present

2. Check the appropriate abundance class on the form for the appropriate species.

2. Besides sage grouse preferred forbs, make particular note of noxious weed abundance.

Appendix D

Site Evaluations Summary Form

Sage Grouse Habitat Summary Evaluation Sheet

Date:			Project or Allotment Name/#:				
Project Description:							
Recorder:			FO:		5th HUC #:		
Habitat Use Period	Pasture/ Site No.	Cover Type	Dominant Species	Ecological Site	Habitat Evaluation Results	Site Potential Limiting? (Y/N)	Estimated % Pasture or Project Area

Directions:

Summarize information from the field worksheets using this form.

Date: Date this form was filled out.

Project or Allotment Name: Identify project or allotment being evaluated.

Watershed (5th HUC): Identify the watershed(s) that the project is in.

Project Description: Describe the project (e.g., S&G evaluation, prescribed fire project; restoration project, land exchange, etc.).

Habitat Use Period: Use one of the following: Breeding (B), Brood-rearing (BR), Wintering (W).

Pasture/Site No.: Should correspond with Field Worksheet Pasture and/or Site Numbers.

Cover Type: Use one of the following or other unique descriptor: Sagebrush (SG), Perennial Grassland - native (PGN), Perrenial Grassland - Seeded Non-native (PGS), Annual Grassland (AG), Annual Grassland with Sagebrush Cover (AGSG), Juniper (J), Riparian (R), Wet Meadow (WM), Lakebed (LB), Spring (SP). Should correspond to habitat type on Field Worksheet.

Dominant Species: List the primary shrub and/or understory grass species. Intended for upland areas. Optional for brood-rearing habitats. Use species codes.

Ecological Site: Use appropriate name of ecological site descriptor from site guidesor soil surveys (upland sites only).

Habitat Evaluation Results: Transfer site evaluation summary from Field Worksheets here: Suitable (S), Marginal (M) or Unsuitable (US).

Site Potential Limiting ? (Y/N): Indicate here if site potential limits achieving suitable habitat objectives. Response needed for all sites identified as marginal or unsuitable habitats.

Estimated % of Pasture or Project Area: Estimate based on available information.